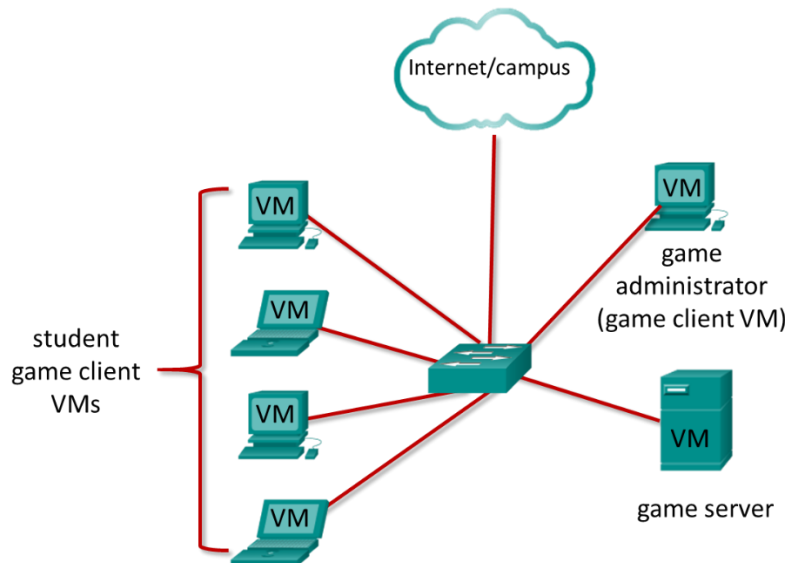


The Cyber Ops Skills Challenge: Setup and Operation - Instructor Guide

Reference Topology



Note: The topology is provided as a guide for the logical game architecture. Other topologies can be used as long as the connectivity requirements are met.

Purpose

This document will support you as you set up and operate the Cyber Ops Skills Challenge.

Part 1: Install Game Server VM

Part 2: Install Game Client VMs

Part 3: Working with Users and Teams

Part 4: Creating a Game Session

Part 5: Running and Joining a Game

Background / Scenario

The CyberOps Skills Challenge exists in a client-server environment in which the client and server are virtual machines run under Oracle VirtualBox. The server VM distributes the game content to the players and allows administration of users, teams, and game sessions. The server runs on a host on the LAN. Students connect to the game server from a game client VM that is run on hosts in the classroom. Internet access is required for the game clients so that students can access threat intelligence tools and other information on the Internet.

Required Resources

- PCs to act as the host computers to the game clients. One individual player or team. At least dual-core processor, 4 GB RAM and 4.8 GB of available storage.

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- A PC to act as the server host. At least dual-core processor, 4 GB RAM and 3 GB of available storage.
- Network connectivity between clients, server, and the Internet
- Oracle VirtualBox installed on server host and all game hosts
- Game server virtual machine installed with game server OVA file: Cyber Ops Skills Challenge Server.ova
- Game client virtual machine installed with game client OVA file: Cyber Ops Skills Challenge Client.ova

Part 1: Install the Game Server VM

Step 1: Install the Game Server VM in VirtualBox

- a. Go to <http://virtualbox.org> to download the Oracle VirtualBox installer and install Oracle VirtualBox.
- b. Click [here](#) to download the game server VM.
- c. Open VirtualBox and select **Import Appliance** from the file menu. In the Appliance to import screen choose the default **Source: Local File System** and under **File:** browse for the client .ova file that you just downloaded.
- d. After selecting the .ova file click **Next**. In the next window under **Machine Base Folder:** create and select a folder/directory where you wish to install the virtual machine, and under **MAC Address Policy:** choose "**Generate new MAC addresses for all network cards**". Leave all other settings as default. Click **Import**.
- e. When the import process is complete, you will see the new virtual machine added to the VirtualBox inventory in the left panel. The virtual machine is now ready to use.
- f. There is normally no need to logon at the game server prompt. Administration is done over the network from a game client by logging in to the server admin account. However, if you need to logon to the game server the username is **analyst** and password is **cyberops**.

Step 2: Run the Game Server VM

- a. In the inventory of virtual machines shown on the left of the VirtualBox window, right-click the server virtual machine and select **Settings**.
- b. Click **Network** and ensure that the **Adapter 1** setting for **Attached to:** is **NAT**.
- c. Click the green arrow **Start** button at the top of the VirtualBox application window.
- d. When the boot process is complete the server is ready to accept connections. There is no need to login.
- e. The IP address of the game server VM will be the same as the host it is running on. The address should be provided to the game players so they can connect to the server and play the game.

Part 2: Install Game Client VMs

Step 1: Install the Game Client VM

Each game client must have VirtualBox installed and the game client OVA imported into VirtualBox. The game is played from the game client. In addition, you access game administration features using the game client VM. For example, you can administer game sessions, create users, etc. by logging in with the **admin** account. **All** administration tasks are carried out via a game client.

Note: It is possible to increase the performance of the game clients by changing the settings for the OVA to provisioning 2 CPUs to the VM. To do this open the **Settings...** menu for the game client VM, either from the **Machine** menu or by right-clicking the VM in the inventory pane. Select **System** and then the **Processor** tab. Increase the number of processors to **two**. If this setting is not available, then it has been determined that the host cannot run at that setting. Changing the number of CPUs available to the VM may affect the performance of other programs that are running on the host.

- a. Install Oracle VirtualBox on each game client.

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- b. Click [here](#) to download the game client VM. Distribute this file to each game client.
- c. Follow the steps above to import the game client VM into VirtualBox.
- d. Start the game client and enter the IP address of the game server. Leave the port number at the default.
Note: Host firewall settings may interfere with connecting to the game server.
- e. To administer the game, logon with the following credentials user: **admin** p/w **CSRgam3\$**.
- f. You will be taken to a game administration page. You can create game sessions, start and end sessions, and administer users and teams from this interface.

Part 3: Working with Users and Teams

Step 1: Creating User Accounts

- a. Start a client VM and logon to the game server as **admin** with p/w **CSRgam3\$**.
- b. Choose **Users** from the menu. Scroll to the bottom of the list of existing users and click **Create New User**. The following information is required:
 - First name ○ Last name ○ User name ○ Email address ○ Password - 6-20 characters including letters, numbers, and special characters (!@#\$%^&*) ○ Password confirmation
- c. Optionally, an avatar can be chosen, and additional demographic and academy information can be entered if it is required.
- d. Click **Create Account** to save the new user.
- e. Students can also register from their game client by choosing **Sign Up** from the menu that appears when they connect to the server. The same information is required.

Note: There is currently no way to reset a lost password. If a student password has been lost, delete the account and have the student recreate the account.

Step 2: Creating Teams

- a. Only an admin user can create teams. This is done by selecting **Teams** from the menu and then clicking the **Create New Team** button.
- b. A name must be supplied for the new team and an avatar can be chosen.
- c. Click the **Create Team** button.

Step 3: Joining a Team

- a. Game players join teams by logging on to the game server as an individual player and choosing Teams from the menu.
- b. Choose **Join** from the **Select an Action** drop down menu that appears next to the team that is to be joined, as shown in the figure.



Part 4: Creating a Game Session

To play a game, a session is created and the desired game scenario is selected. Sessions can be scheduled to start automatically at a specified time, or can be started manually.

Step 1: Create a Session

- Log on as Admin and choose Sessions from the menu.
- Click **Create a New Session** and complete the fields as in the figure below.

The screenshot shows a 'Session Details' form with the following fields:

- Name: Period 2 Session
- Host: Ms. Livingstone
- Start Time: 10/10/2018 11:27 AM
- Duration (min): 60
- Scenario: Game Scenario I
- Offering: CCNA Cybersecurity Operations v1.1

At the bottom, there are two buttons: 'Create Session' (orange) and 'Cancel' (grey).

- Select a scenario from the drop-down list of available scenarios. Instructors can create their own scenarios, however that is outside the scope of this document.
- Click **Create Session**. The session should now appear in the list of active sessions that is seen when the Admin or players users login to the game server.

Note: An Admin can start a game at any time prior to the Start Time.

Step 2: Join a Session

Admin users can administer a session from the drop-down list of actions that are associated with the Session. If you want to view what is in a game scenario, a session must be created and joined. This provides the same view of the game that players see. From here you can be review and test the game scenario. a. To review a game scenario:

- Create a session.
- From the drop-down list of actions for the session, select **Join as Individual**.
- If the session has not yet been started, you will be taken to the Lobby for the session. You can start the session from there. Otherwise, you can start the game from the Active Sessions window by selecting **Start Now** from the Choose an Action drop down menu.

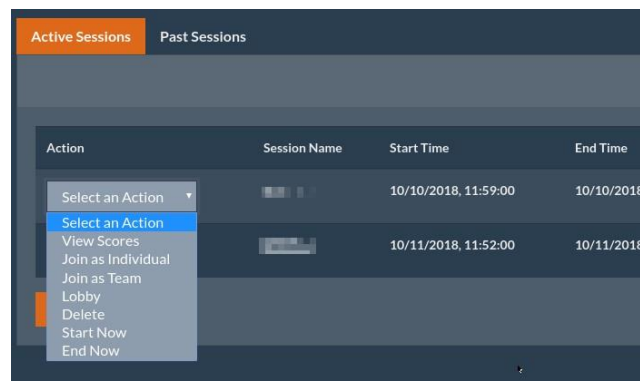
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- 4) After a brief delay, you will be presented with the gaming interface that contains the questions and tasks for the game scenario. Scores for correct answers will automatically be posted to the leaderboard after a brief delay. During an actual game, the leader board is visible in the game interface for all players and is dynamically updated. The leaderboard will display the players or teams order by score, highest first.

Note: In order to see more of the contents of the game interface, it may be useful to press **F11** to make your browser go full screen. However, this will cover the desktop and block access to the terminal, Wireshark, and the file system, etc. Pressing **F11** again will show the rest of the desktop. The zoom level can also be changed within Firefox.

- b. Game players join the scenario in much the same way as the Admin user does to review the game. However, students are not able to start a game. If a game has not started, students are sent to the lobby where they wait for the game to start. This enables the Admin to verify that all students have logged in and are ready to play.

The session actions are shown below. This is the Admin version of the menu. Students see a subset of these choices.



Part 5: Running and Joining a Game

Step 1: Joining the Game

- a. Students start their game client VMs in VirtualBox.
- b. They will be presented a screen that asks them to provide the game server IP address and port. The port should be left at the default value.
- c. Next, students must logon to their accounts. They could create an account at this time as well.
- d. From the **Select an Action** menu next to the game session, the students choose **Join as Individual** or **Join as Team**.
- e. If the game has not yet started, they enter the lobby, otherwise, they join they game directly.
- f. The Admin can start the game when the students are ready rom the lobby.

Step 2: Administering a Game

A running game session can be stopped at any time by selecting the **End Now** option from the **Select an Action** drop down menu for the session.

Scores for game sessions that have ended can be reviewed by the student or instructor from the Score History menu.

Additional Information

Students will require the following information to play the game:

- 1) Game server IP address
- 2) Game client Linux credentials: username: **analyst** password: **cyberops**.